

GUIDE TO YOUR YAMAHA SYNTHESIZER SY-2



Welcome to the musical world of Yamaha. We at Yamaha appreciate your confidence in Yamaha products, and we will do everything we can to make sure your new purchase, the Yamaha synthesizer SY-2, provides a lifetime of enjoyment. The SY-2 is one of the world's newest and most advanced musical instruments. Its design provides a unique combination of simplicity of operation with nearly limitless versatility. At the flip of a lever, 26 realistic instrumental tones plus two additional space age tones ("Funny" and "Drake") are immediately available. Real-time performances are easily duplicated and the confusion of re-registration between musical selections is eliminated.

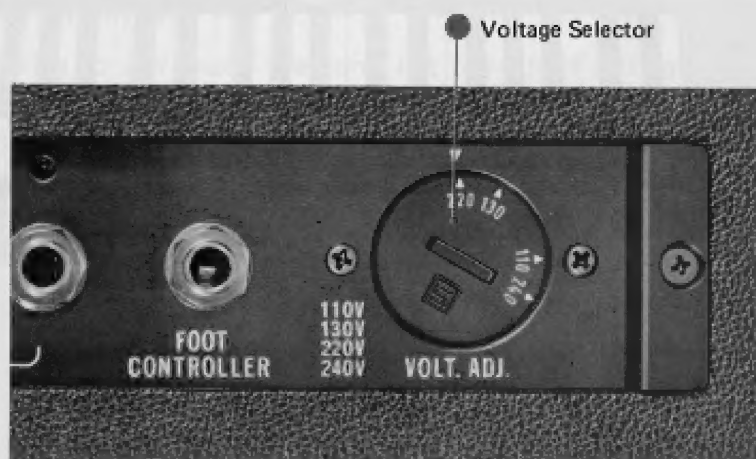
The SY-2 synthesizer is not limited to these 28 voices. Each voice can be modified to produce an almost infinite variety of tonal patterns. Most of the terms you may have heard relating to synthesizers—i.e., envelope control, pitch bend, touch response, resonance, portamento, etc.—are available to you the performer. These will be covered a little later in detail.

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Precautions

The line voltage available at the AC wall outlet may differ from one area to another. While models exported to the U.S.A., Canada, Europe, and Australia are preset prior to shipment, you should check the voltage selector setting before the unit is plugged in. The voltage settings available are — 110, 130, 220, and 240V. *If the line voltage selector plug is properly set, make sure the SY-2 power switch is "off".* The power cord may now be plugged in. When interconnecting the SY-2 to a companion unit (or any other comparable inter-connecting of devices), it is advisable that the units be either "off" or unplugged. This precludes any chance of shock hazards or high level transient signals that can cause equipment damage.



This is Your Yamaha

Synthesizer SY-2



- ① Tuning Control
- ② Portamento Control
- ③ Pulse Width Control
- ④ Vibrato Controls
- ⑤ Pitch Bend Lever
- ⑥ Portamento Lever
- ⑦ Tone Bend Lever
- ⑧ Pulse Width Lever
- ⑨ Vibrato Lever
- ⑩ Envelope Lever

- ⑪ Filter Lever
- ⑫ Preset Tone Levers
- ⑬ Side I/Side II Lever
- ⑭ Transposition Levers
- ⑮ Touch Control Levers
- ⑯ Foot Control Levers
- ⑰ Touch Sensitivity Control
- ⑱ Foot Sensitivity Control
- ⑲ Master Volume Control
- ⑳ Envelope Controls

- ㉑ Filter Controls
- ㉒ Keyboard
- ㉓ Tone Bend Controls
- ㉔ Power Switch
- ㉕ High/Low Level Switch
- ㉖ Pin Output Jack
- ㉗ Phone Output Jack
- ㉘ Foot Controller Jack
- ㉙ Voltage Selector

Connections

The Yamaha SY-2 synthesizer can be connected to an electronic organ, such as the Yamaha Electone, or to almost any amplifier system. It can stand alone as a combo type unit with its four legs, or the legs can be removed for placing the SY-2 on top of an organ, etc.

On the rear panel are two output jacks ②⑥ ②⑦ (pin plug type and phone plug type), plus a HIGH/LOW level switch ②⑤. In addition, the SY-2 is accompanied by an accessory connector cord which should be used for connection.

To connect to a music amplifier or other phone type input jack, plug the phone plug end of the cord into the amplifier jack and the other (pin plug) end into the proper jack on the SY-2 rear panel.

To connect to an organ or hi-fi amplifier, reverse the plugs (use the pin plug for the amplifier/organ input jack and the phone plug for the SY-2 end).

Once connections are made, experiment with the level switch to find the setting which best matches the connected unit's input sensitivity.

NOTE: When connecting to a Yamaha Electone, use the HIGH setting.

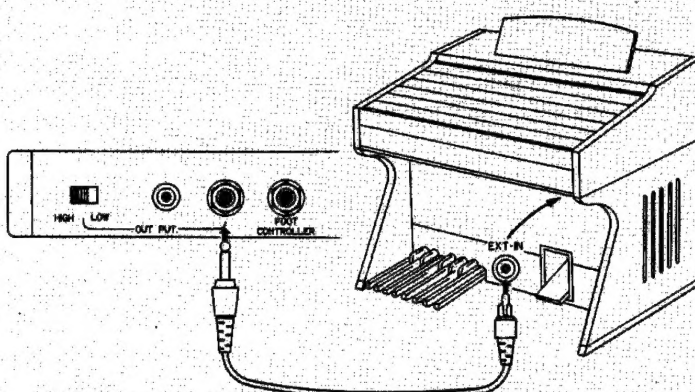
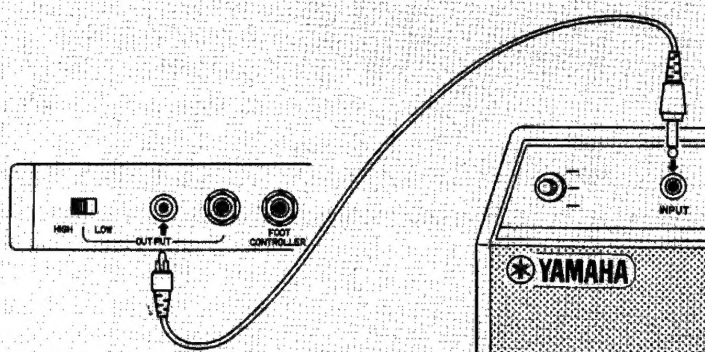
Output Level and Impedance

HIGH: 0.8Vrms / 600 ohms

LOW: 80mVrms / 600 ohms

FOOT PEDAL JACK

To use the foot pedal (included) with the SY-2 synthesizer, refer to page 10.

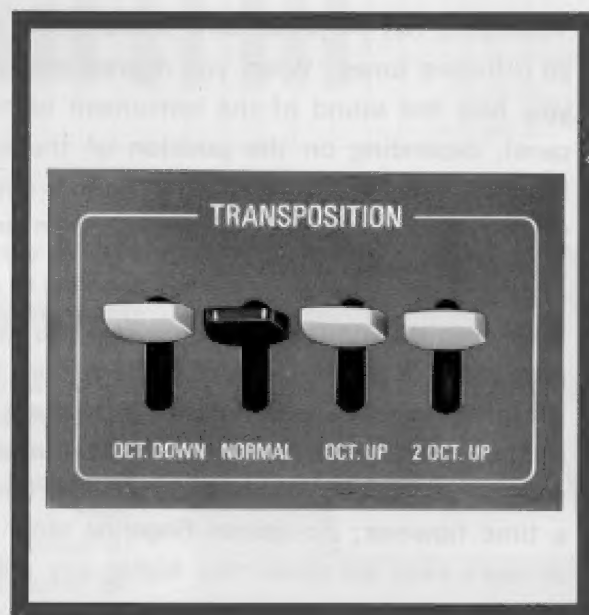


Keyboard

Your Yamaha synthesizer's keyboard has 37 keys ranging from c to c_3 . The three transposition levers ❶ shift the keyboard frequency range up either one or two octaves, or down one octave, that is, c_1 - c_4 , or c_2 - c_5 or C - c_2 . Thus, your synthesizer has a total range of six octaves (actually seven, since there are two normal pitches, depending on the preset selected).

When you depress two or more transposition levers at the same time, you will hear only the one furthest to the right on the panel. When no transposition lever is depressed, the keyboard range from c to c_3 is heard, as if the "normal" transposition lever was depressed.

Your Yamaha synthesizer is designed to sound only one note at a time; if you depress more than one key at the same time, you will always hear the highest note.



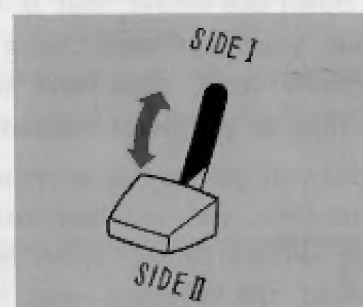
Tuning

To tune your SY-2 to another instrument, wait about fifteen minutes after it is turned on. Then push down the Flute/Clarinet preset tone lever, set the vibrato lever to the "control" position and vibrato depth control to the "minimum" position to eliminate the vibrato. Turn the "tuning control" ❶ at the left of the keyboard to the left (flat) or right (sharp) until you obtain the right pitch; the pitch can be raised or lowered about 100 cents (one semitone) in relation to the standard pitch.

Preset Tone Levers

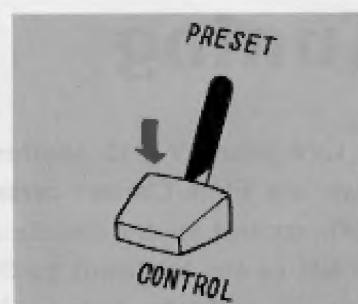
Your SY-2 has 14 preset tone levers which, by switching, actually create 28 different tones. When you depress one of the levers and push a note, you hear the sound of the instrument identified by name on the lever panel, depending on the position of the side I/side II lever ⑬. For instance, when the Flute/Clarinet lever is depressed, you'll hear a Clarinet when the side I/II lever is pressed down or a Flute when the side I/II lever is in the up position.

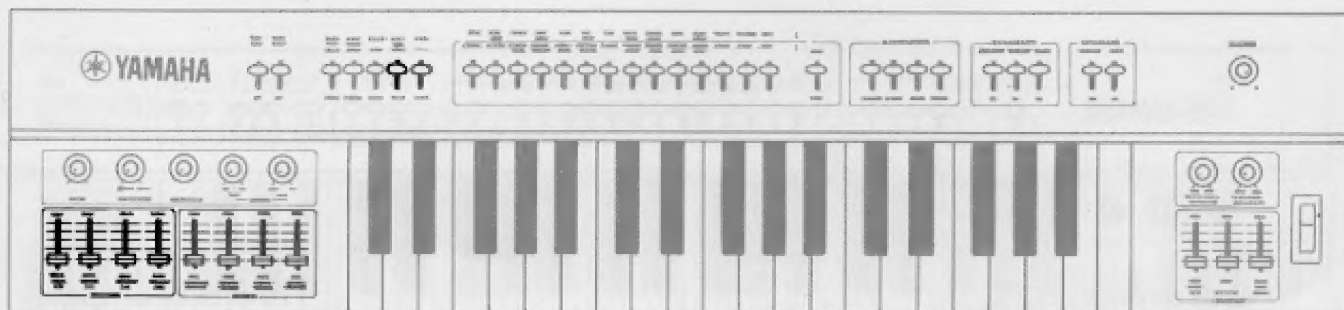
Your Yamaha synthesizer is designed to create the sound of only one instrument at a time. If you depress more than one preset tone lever at the same time, you hear only the instrument selected by the lever furthest to the right on the panel. When no levers are depressed, naturally you will hear no sound. The keyboard is designed to play only one note at a time however; no special fingering technique is required. When two or more keys are down, the higher key will have priority.



Variable Effect Controls

Your Yamaha synthesizer has a number of variable effect controls to permit you to add variations to the preset tones and to create a new world of musical expression. For convenience, all the effect variation levers are arranged to the left of the panel, while the effect controls are arranged at the left and right of the keyboard. To introduce them, depress the corresponding effect levers. These effects can be combined in any combination. A little experimentation will open many — almost infinite — possibilities to you.





FILTER ①②

Simply stated, a filter alters the harmonics contained in a note to change its color or timbre. Each of the preset tones has as a design feature the characteristic harmonic structure and resonant points that identify a particular instrument.

To understand the low pass and high pass filters, keep in mind the literal meaning of their names. The low pass filter, for example passes only low frequencies, cutting others. The lever raises or lowers the point above which this filter will not pass harmonics. In the opposite way, the high pass filter will permit only high frequencies above its set level to pass (cutting those below it).

Switch the filter to manual control by putting the filter lever ① in the "control" position (down). You can now control the filter characteristics (from lowpass to highpass, and degree of resonance) with the filter frequency and resonance controls ②.

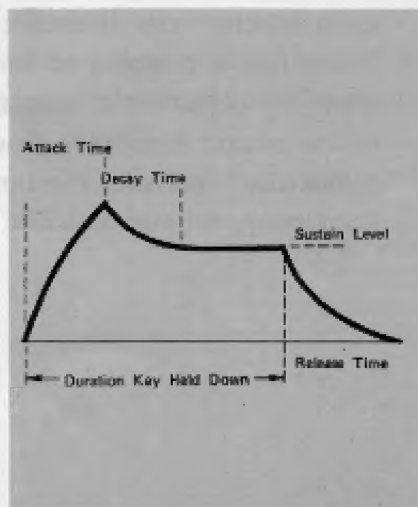
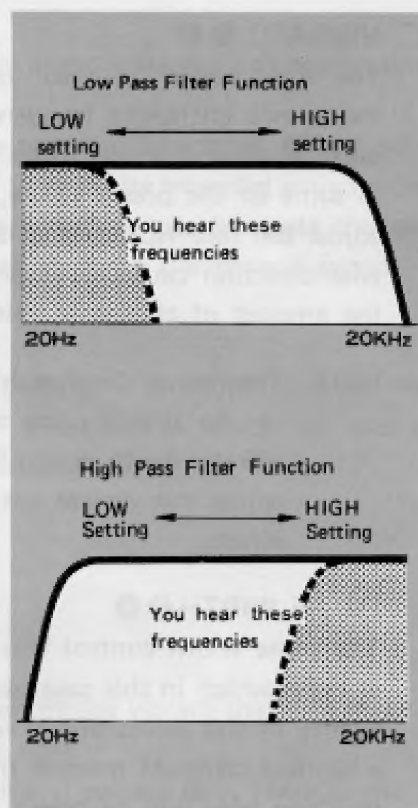
The closer the filter frequency controls are to the high position, the more harmonics are allowed to pass, resulting in a very brilliant sound. When you slide either or both frequency controls from "low" to "high" while holding a key down, the sound you hear changes from soft and muted to bright and crisp. In the meantime, the closer the resonance control is to the maximum position, the more nasal the sound becomes, emphasizing the frequency just before cutoff. When you set the resonance control in its center position, you can create a wah-wah effect by sliding the frequency control back and forth.

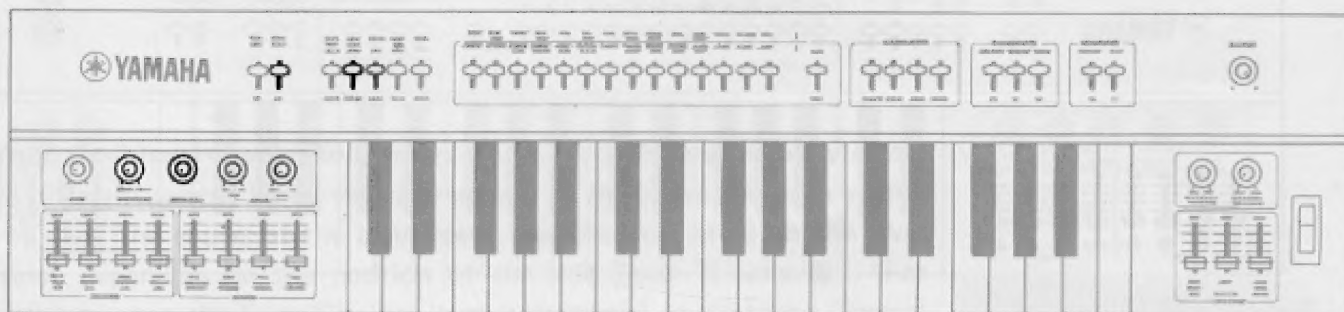
NOTE: If the high pass filter is set to the "high" position, the fundamental frequency of that tone may be cut and no sound will occur.

ENVELOPE ③④

The term "envelope" may seem strange, however, every sound event has an envelope. If you draw a heavy line connecting the peaks of the sounds' waveform, you would have the event, or "envelope" waveform. Synthesizers employ separate envelope generators with a varying number of controls to adjust the different portions of the envelope waveshape. The Yamaha SY-2 preset voices all have special preset envelope patterns, which sound as long as the envelope lever ③ is set to "preset." By placing the envelope lever in the control position, the preset envelope is cancelled and the variable envelope controls ④ are now functional. When the attack time control is set to "slow", a long rise time results. When the release time control is set to "long" the tone will continue to sound for quite some time after the key is released.

NOTE: When all four controls are set to their bottom positions a perfectly flat envelope is created — i.e., no sound will occur.





VIBRATO ④ ⑨

The effect called "vibrato" is a familiar one to almost everyone involved in music. The term actually indicates a change in frequency, both above and below the normal pitch of the note. This change is quite small and is not to be confused with other effects. Control ⑨ cancels the preset vibrato included in some of the preset voices, i.e., flute, trumpet, bow violin, oboe, etc., and enables the performer to adjust the rate (speed) and depth to their own taste. Controls ④ are for speed (rotation in the clockwise direction causes a faster vibrato rate) and for depth (rotation in the clockwise direction increases the amount of change in pitch).

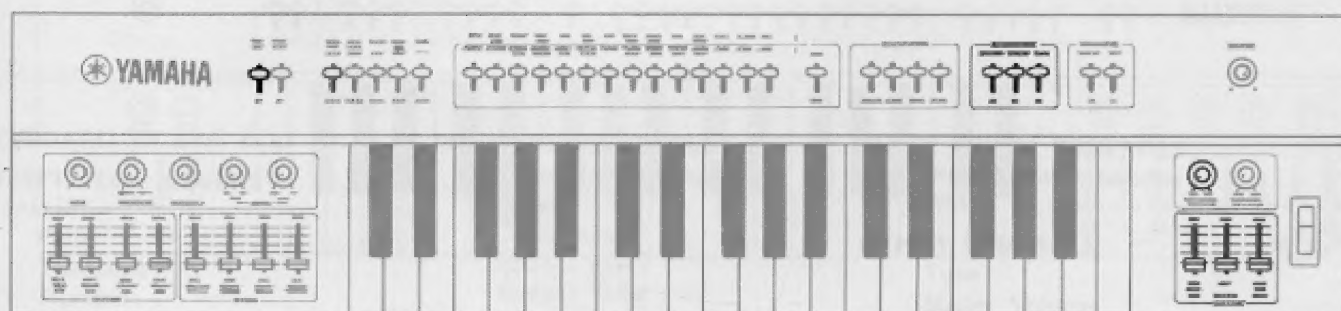
NOTE: The rate of "wah-wah" included in tones of "funny" and "wah guitar" as a preset part of the voice, can be altered using the vibrato controls. Place the vibrato lever ⑨ to "control" position, set the vibrato depth control (section ①) to the minimum (counterclockwise) position. You can now adjust the vibrato speed control to obtain the desired rate of wah without introducing a vibrato effect.

PULSE WIDTH ③ ⑧

The pulse width control is used to vary the ratio of pulse height to width. A square wave is one form of pulse which in this case has a ratio of 50% height and 50% width — hence the name square wave. The tone quality of this waveshape is very clarinet like. Reducing the width of the pulse will alter the tone quality in a slightly different manner than that performed by a filter. When the pulse width is very narrow, the resulting tone will be bright and rather nasal.

PORTAMENTO ② ⑥

The term "Portamento" is a latin musical notation used to indicate a sound gliding continuously from some selected note (frequency) to a second selectable point, sounding all the intermediate frequencies. This effect is designed to function between any two keys played in sequence, either higher or lower, when the portamento lever ⑥ is on. The time required for the pitch to shift from the first note played to the second (oscillator slew rate) is controlled by the portamento control ②. Turning the control "clockwise" increases the time required for the pitch to reach the normal pitch of the second key played. Conversely, counterclockwise rotation results in a very short period (fast slew rate).



TONE BEND ⑦ ②

The tone bend that changes the timbre in conjunction with the attack time, intensity and decay time controls.

By placing the tone bend lever ⑦ in the control position, the variable tone bend controls ② are now functional. The attack time control adjusts the time it takes for a note to reach its intended sound after the key is pressed. The intensity control alters timbre by adjusting the extent to which a note changes in tone. The decay time control adjusts the time it takes for a note to return to the normal sound.

PITCH BEND ⑥

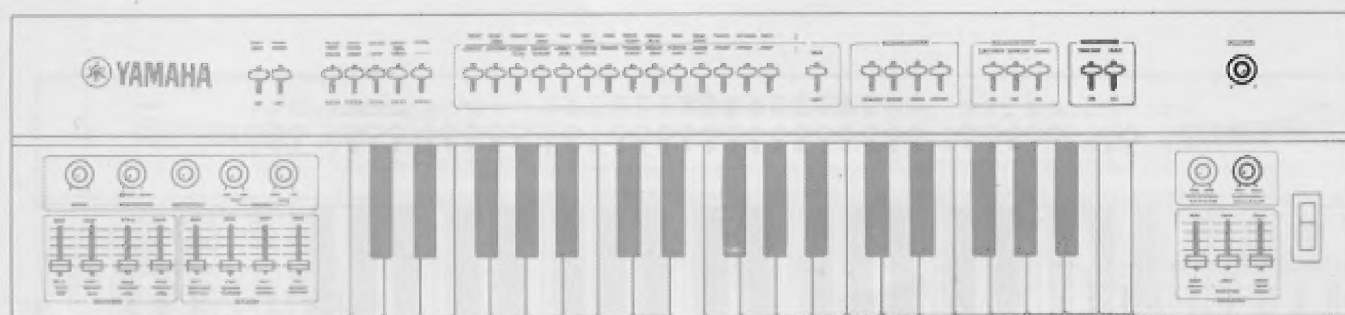
With the pitch bend lever depressed, a note will be lower by about 100 cents (one semitone) in pitch the moment a key is depressed, then return to the normal pitch gradually. The pitch to which the note is lowered and the time it takes for it to return to its normal pitch are preset.

Touch Controls

Your Yamaha synthesizer is equipped with special touch controls that adjust the vibrato depth, wah-wah and volume in direct proportion to the downward pressure on the keys.

There are three levers to the right of the panel: vibrato depth, wah-wah and volume ⑮. There is also a sensitivity control ⑰ at the right of the keyboard that adjusts the overall effect of the touch controls. When the vibrato depth lever is on, and a key is played lightly, you hear almost no vibrato. When you press the key harder, the vibrato effect will increase. You can adjust the sensitivity of this effect with the sensitivity control.

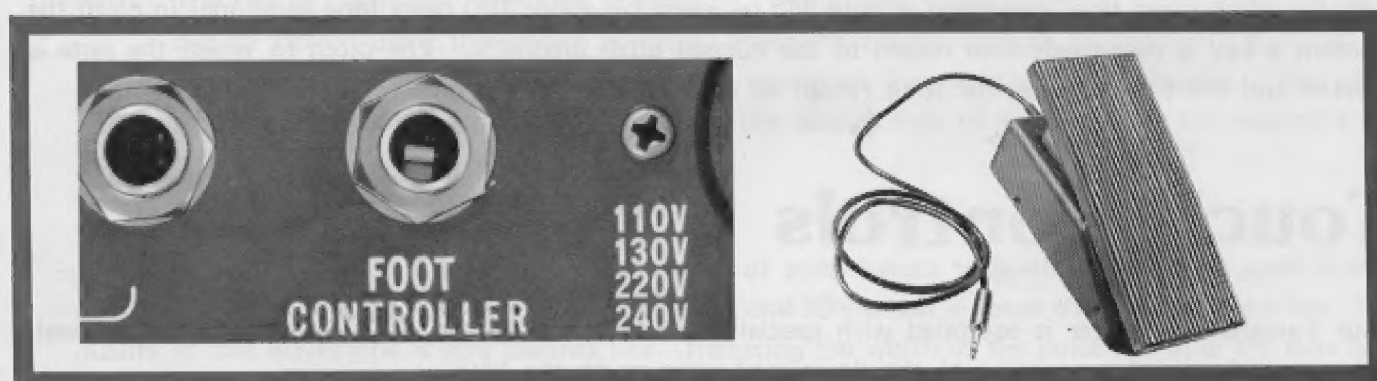
All of the touch-sensitive effects can be used in combination with each other. For example, when the vibrato depth and volume levers are on, a subtle change in finger pressure on a note alters both the vibrato depth and the volume.



Foot Controls

A foot pedal is included with the SY-2. To use it, plug its cord into the jack ⑫ on the rear panel. The two levers ⑬ at the extreme right of the panel control the two functions of the foot pedal. When the wah-wah lever is on a wah-wah sound can be created by pushing the pedal down and letting it up. When the volume lever is on the foot pedal works like the expression pedal of an organ; press down to increase the volume.

Both foot control operations can be used at the same time. In addition, the sensitivity of the foot control can be adjusted with the sensitivity control ⑭.



Master Volume

The master volume control ⑮ adjusts the overall volume of your Yamaha synthesizer so you can achieve a balance in volume between your SY-2 and other instruments.

Specifications

KEYBOARD 37 keys c-c3

PRESET TONE LEVERS

Side I

Flute
Trombone
Trumpet
Saxophone
Oboe
Bow Violin
Piano
Harpsichord
Contrabass
Tuba
Bass Guitar
Funny
Trumute
Double

Side II

Clarinet
Bassoon
French Horn
Bass Clarinet
English Horn
Pizzicato String
Guitar
Hawaiian Guitar
Pizzicato Bass
Sousaphone
Wah Guitar
Drake
Growl
Reed

Side I/Side II Selector

FILTER CONTROLS

Preset/Control Selector
Low Pass Frequency
Low Pass Resonance
High Pass Frequency
High Pass Resonance

ENVELOPE CONTROLS

Preset/Control Selector
Attack Time
Decay Time
Sustain Level
Release Time

VIBRATO CONTROLS

Preset/Control Selector
Speed
Depth

TRANSPPOSITION LEVERS

One Octave Down
Normal
One Octave Up
Two Octaves Up

TOUCH CONTROLS

Vibrato Depth (On/Off)
Wah-Wah (On/Off)
Volume (On/Off)
Sensitivity

FOOT CONTROLS

Wah-Wah (On/Off)
Volume (On/Off)
Sensitivity

TONE BEND CONTROLS

Preset/Control Selector
Attack Time
Intensity
Decay Time

PITCH BEND CONTROL

On/Off Selector

PORTAMENTO CONTROLS

On/Off Selector
Time

PULSE WIDTH CONTROLS

Preset/Control Selector
Width

OTHER CONTROLS

Tune
Master Volume

OTHER FITTINGS

Outputs
Phone Jack
Pin Jack
Level Switch (High/Low)
Foot Controller Jack
Power Switch
Pilot Lamp
Music Rest

CIRCUITRY

Solid State
Power Consumption: 20 Watts
Power Source: AC, 50/60Hz

DIMENSIONS

Width: 90cm(35½")
Depth: 32cm(12½")
Height: 17cm(6¾") without legs
20cm(8") with case

WEIGHT

21kg(46 lbs.)

FINISH

Black Leatherette Siding

ATTACHMENT

Foot Pedal

Specifications subject to change without notice.

SINCE 1887  **YAMAHA**
NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN